BAR-039

BACHELOR OF ARCHITECTURE (B.Arch.)

Term-End Examination, 2019

BAR-039 : ARCHITECTURAL SCIENCES AND SERVICES - II (ILLUMINATION AND ACOUSTICS)

Time : 3 Hours]   [Maximum Marks : 70

Note : Section A is compulsory. Answer any 4 questions from Section B. Use of Scientific Calculator is permitted. Support your answers with neatly labeled diagrams.

SECTION - A

1.   Answer any five of the following :   [2×5=10]

(a)   Glare

(b)   Illuminance

(c)   Daylight Factor

(d)   Noise Criteria (NC) Curves

(e)   Floated floors

(f)   Sound masking

(g)   Reverberation

SECTION - B

Note : Answer **any four** of the following :

1.   Explain the Lumen Method of Lighting Design.   [15]

2.   (a)   Sketch a simple lighting control diagram indicating the fixtures, sensors, controller unit, their inter connectedness and boundaries of control zones.

[7]

(b)   Explain the lighting operation and maintenance necessary to ensure the lighting systems work as designed throughout the life cycle of a building.   [8]

3.   (a)   What is Transmission Loss (TL) of a material in the context of building acoustics ? Find the TL of a material that has a sound transmission coefficient of 6.0×10^{-4}.   [5]

(b)   Explain 'Noise Reduction' (NR). What are the factors on which NR is dependent on ?   [4]

BAR-039   (2)

(c)   Two adjacent rooms in a building have a common wall constructed of 4 inch thick brick and has a TL of 40 dB at 500 Hz. The surface area S of the wall is 200 ft² and both rooms have 300 sabins of absorption a_2 at 500 Hz. Find the sound level L_2 in room 2 if the sound level L_1 in room 1 is 74 dB.

[6]

4.   What is meant by Impact Noise Isolation ? Explain some of the construction techniques used in floor and ceiling constructions for impact noise isolation ?   [15]

5.   (a)   What is meant by 'Cross Talk' in sound transmission ? How can you take precautions in the design of air ducts to prevent cross talks ?[6]

(b)   Explain some of the strategies for noise control of mechanical systems.   [9]

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